

## Exercise 5

In Exercises 1–6, find the domain and range of each function.

$$f(t) = \frac{4}{3-t}$$

### Solution

The only requirement for a rational function is that the denominator cannot be zero.

$$3 - t \neq 0$$

$$t \neq 3$$

As a result,

$$\text{Domain: } \{t \mid t \neq 3\}.$$

When  $t$  is slightly less than 3, the fraction is a really big negative number, and when  $t$  is slightly greater than 3, the fraction is a really big positive number: The lowest value of  $f$  is  $-\infty$  and the highest value of  $f$  is  $\infty$ . It might seem that  $-\infty < y < \infty$ ; however,  $f$  can never be zero because the numerator is 4, a nonzero constant.

$$\text{Range: } \{y \mid y \neq 0\}$$

